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2003 OHIO POTATO GERMPLASM EVALUATION REPORT

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The Ohio State University

the
NORTH-CENTRAL (NCR-84)
and
NORTHEAST (NE-1014)
REGIONAL PROJECTS
COOPERATING

THE OHIO STATE UNIVERSITY EXTENSION

THE OHIO STATE UNIVERSITY OARDC

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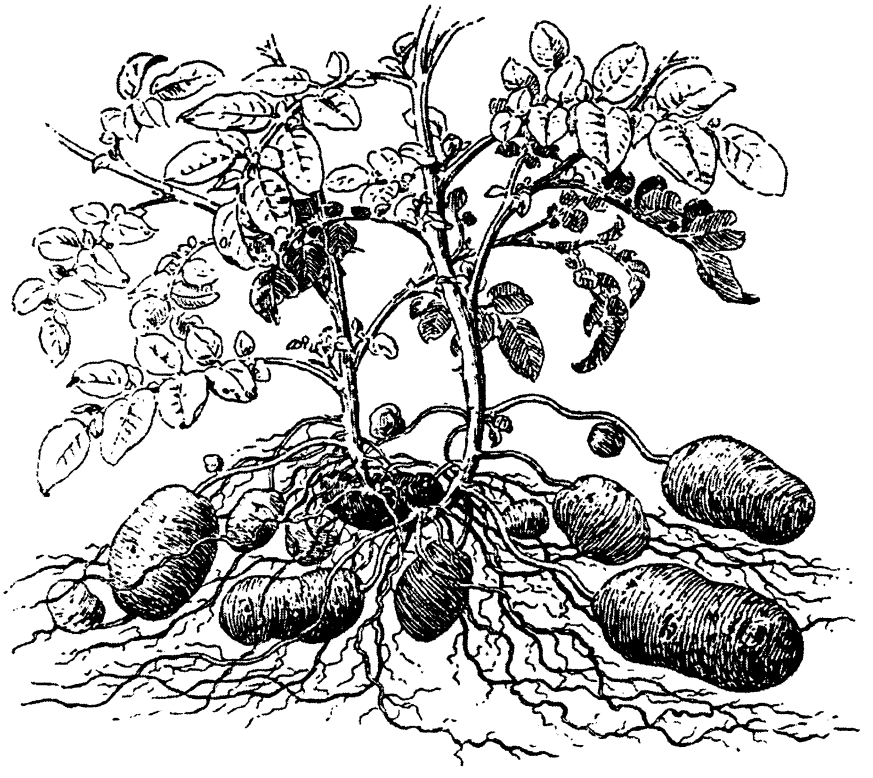

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OHIO POTATO GERMPLASM EVALUATIONS - 2003

Summary

Ohio cooperates with private and public breeders in the U.S. and elsewhere in evaluating varieties and experimental lines of fresh and processing potatoes. In 2003, we evaluated a total of distinct 177 varieties and experimental lines developed in nine breeding programs (Table 1). Entries were placed into one of five experiments (Table 2) completed at the Ohio Agricultural Research and Development Center (OARDC) in Wooster, OH; North-Central Regional Project 84 (NCR-84), Northeast Regional Project 1014 (NE-1014), Triple Observation (OBT), Double Observation (OBD), and Single Observation (OBS). Named varieties were included in at least one study, numbered entries in only one study. Entries were contributed by breeding programs in Alberta, Canada (CAA), Maine (ME), Michigan (MI), Minnesota (MN), New York (NY), North Dakota (ND), Oregon (OR), Wisconsin (WI), and the USDA-ARS (ARS) in Beltsville, MD. A total of 44 entries were contributed by ME, 7 by NY, 9 by WI, 27 by MN, 4 by CAA, 4 by MI, 4 by ND, 1 by OR, 38 by USDA-ARS/Beltsville and 42 various named or numbered varieties. Entries from ARS, ME, and NY represented the NE-1014 Regional Project. Entries from ARS, WI, CAA, MI, MN, ND, and OR represented the NCR-84 Regional Project.

The studies were established to evaluate the growth and market traits of each entry when grown under non-irrigated conditions in Ohio. The fact that the trials at the OARDC are not irrigated tends to affect the performance of individual entries. In general, temperatures increased tuber yield in 2003. Marketable yield of six varieties and seasonal rainfall for 1994-2003 at the OARDC are shown in Table 3.

Fifty-four, seventy-three, and forty-seven entries were rated as early-, mid-, and late-maturing respectively. Total and U.S. #1 yield averaged 269 and 174 cwt/A across all studies, respectively, with a range of 66-815 (total) and 129-267 (U.S. #1). Average total yield was 403 and 328 cwt/A in the NE-1014 and NCR-84 studies, respectively. Four entries were rated as producing tubers with good-excellent overall appearance. Based on positive yield and external tuber traits at harvest, tubers from eighty-four entries were forwarded for measures of specific gravity and chip quality. Eleven entries were rated as having acceptable chip quality. Ohio's potato crop is sold in fresh chip markets. Therefore, as in past years, consumer-oriented aspects of cooking quality are also being assessed in a number of entries.

Procedures

Planting

Seed potatoes were cut during in early May and then cured and stored under recommended temperature and humidity conditions at the OARDC until planting on May 27 and 28. Table 4 contains information on cultural, nutrient, and pest management practices. Table 6 contains pre-plant soil analysis results. Soil type was a well-drained Wooster silt loam. All entries in the NCR-84 and NE-1014 experiments were replicated three times. Entries in the Observation studies were replicated once, twice, or three times depending on seed availability (Table 2).

Field Observations

Plant stands were recorded five and seven weeks after planting. Whole plots were harvested on September 25 and 26. At harvest, observations were taken on external tuber characteristics. Observations included tuber shape, color, surface texture, eye depth, general appearance, and uniformity. These observations, along with yield data, determined which entries were included in chip and cooking quality evaluations and which may be evaluated in the 2004 season. In addition, tubers were graded for size on October 27 and 29. At grading, 10 randomly selected tubers from each replicate in the NCR-84, NE-1014, and Observations studies were examined for hollow heart and other internal defects. Scab and external defects were rated in a second random sample of 20 tubers. An 8 lb sample from each entry in the NCR-84 and NE-1014 studies and from promising entries in the Observation plots were saved for specific gravity and chipping quality measurements completed on December 1, 2003.

Chipping and Cooking Quality Evaluations

Samples were held in refrigerated storage (44-48° F) September 25-October 27 and then removed from storage and held under ambient conditions (approx. 70° F) until being processed on December 1, 2003.

For chipping quality evaluation, 5 randomly selected tubers were placed in an abrasive peeler and sliced to an approximate thickness of 0.063 inches (approximately 16 slices per inch). Raw slices were rinsed in cold water and then fried in a continuous fryer containing clear liquid shortening maintained at 190°C (372°F). After frying, a representative sample was taken for visual color evaluation using standards contained in the manual published by the SFA by which chips light in color are scored "1" and very dark chips are scored "5". Chip color was also measured with an Agtron Electronic Model M-350. Agtron readings and chip color are negatively related (high readings indicate lighter chip color). The percentage of chips with blister(s) greater than 1 cm (0.39 in.) was recorded.

Cooking quality of a number of entries from all experiments will be assessed using tubers held under refrigerated conditions for three months. These data will be summarized for a report planned in Spring 2004.

Results

Yield, plant and tuber trait, and chipping quality data are present in Tables 7-13. Total and U.S. #1 yield averaged 269 and 174 cwt/A across all studies, respectively, with a range of 66-815 (total) and 129-267 (U.S.#1) cwt/A. Average total and U.S. #1 yield in the NCR84 study was 318 and 197 cwt/A, respectively. Average total and U.S. #1 yield in the NE-1014 study was 268 and 216 cwt/A, respectively. Fifty-four entries were rated as early, seventy- three as mid-season, and forty-seven as late. Of the 84 entries evaluated, overall tuber appearance was rated poor-fair, fair-good, and good-excellent in twenty-seven, sixty, and twenty-eight entries, respectively. Of the entries evaluated for chipping quality, specific gravity was $\geq$ 1.080 in seven entries and chip quality (based on SFA color and percent blistering) was acceptable in eleven entries.

1. Entries having an overall appearance rating of $\geq$ 7 (good-excellent) at grading.
    - NCR-84: V78-25, R. Norkotah
    - NE-1014: B1240-1
    - Triple Observation: B2078-1, B2135-163

- Double Observation: none
- Single Observation: AF2498-3, MN00167-1, MN00501-1, MN99158-1

2. Entries having an external tuber rating of ≥ 7 (good-excellent) at grading and marketable yield ≥ the study average.
    - NCR-84: V78-25
    - NE-1014: B1240-1
    - Triple Observation: none
    - Double Observation: none
    - Single Observation: AF2498-3, MN00167-1, MN00501-1, MN99158-1

3. Entries having a specific gravity ≥ the study average
    - NCR-84: MN15620R, MN18710 Rus, ND2470-27, Atlantic, MSG227-2, ND5822C-7, V0379-2, A9014-2, R. Burbank, NorValley, W1836-3Rus, MSH 031-5, W1201, MSE202-3Rus, W1773-7, Snowden
    - NE-1014: B1826-1, NY128, AF1569-2, AF1775-2, NY126, B1806-8, Brise du Nord, AC Red Island, AF1938-3, AF2215-1, NY127, NY120, Yukon Gold, AF1455-20, AF2115-1, AC Sunbury, AF2207-4, Aquilon, B1240-1
    - Single Observations: MN99383-1, AF2498-3, MN99158-1, W37-29, AF2497-2
    - Triple Observation: B1523-4, B1763-4, US17-91, B1884-9, B2135-163, B0984-1, B1927-14, US87-92, B0811-4, B1829-5
    - Double Observation: B2177-52,

4. Entries having a chip score of ≤ 3.
    - NCR-84: ND2470-2, Snowden
    - NE-1014: AF2207-4, AF2215-1, B1826-1
    - Single Observations: AF2497-2, W37-29
    - Triple Observation: US17-91, B0811-4, B1884-9, US87-92

Table 1. List of programs participating in the 2003 Ohio Potato Germplasm Evaluations.

Number	Program	Genotypic Code(s)	2003 experiment: NCR-84	NE-1014	Triple Observation	Double[2] Observation	Single[1] Observation	Total
			# entries in experiment					
1	Colorado	COMN					2	2
		US			2			2
2	Oregon	A	1					1
3	Univ. Maine	AF		9			35	44
4	USDA							
	ARS	ARS					2	2
	Beltsville	B	1	3	26	6		36
5	Michigan State Univ.							
		MSE	2					2
		MSH	1					1
		MSG	1					1
6	Univ. Minnesota	MN	4				23	27
7	North Dakota State Univ.	ND, NDTX	3	1				4
8	Cornell Univ.	NY		6	1			7
9	Ag and Agri-Food Canada	V	4					4
10	Univ. Wisconsin							
		W	4			1	3	8
		CV	1					1
11		RHST					2	
	various	named/# variety	8	15	9	10		42
	Total		30	34	38	17	67	184

[1] refers to number of single-row replicates. All other experiments contained three replicates.

[2] refers to the number of double-row replicates. All other experiments contained three replicates.

* number higher than reported due to the inclusion of specific varieties in two experiments. Number unique genotypes = 177.

Table 2. List of varieties and experimental lines planted in the potato germplasm evaluations at the Ohio Agricultural Research and Development Center (OARDC) in Wooster, OH in 2003.

Regional Project and Experiment

NE-1014	NCR-84	Triple Observation	Double Observation	Single Observation	
1 AF 1455-20	1 W2275-3R	1	1 B 2259-3	1 AF 2412-2	50 COMN 98109-1
2 Aquilon	2 R. Burbank	2 B 1763-4	2 B 1999-175	2 AF 2432-1	51 MN 00467-4
3 AF 1938-3	3 V 0379-2	3 B 1145-2	3 B 2001-184	3 AF 2204-1	52 MN 00441-1
4 NY 128	4 MN 15620R	4 B 1758-4	4 B 2177-52	4 AF 2502-6	53 MN 00317-1
5 AF 2115-1	5 MN 18747 LW	5 B 1523-4	5 B 2246-14	5 AF 2497-2	54 MN 99380-1
6 NY 125	6 MSE 202-3 Rus	6 B 2078-1	6 B 2229-4	6 AF 2427-1	55 MN 99460-21
7 B 1806-8	7 MSH 031-5	7 B 2079-6	7 Red Pearl	7 AF 2393-5	56 MN 99291-3
8 Envol	8 V 0056-1	8 B 2100-13	8 MacIntosh Black	8 AF 2393-7	57 MN 99158-1
9 AF 1775-2	9 CV 89023-2R	9 B 2008-34	9 All Blue	9 AF 2498-6	58 MN 99106-1
10 AF 2222-2	10 MN 18710 Rus	10 B 0811-4	10 Huckleberry	10 AF 2508-8	59 MN 99456-2
11 Superior	11 Snowden	11 B 2135-163	11 Magic Molly	11 AF 2525-1	60 MN 000441-1
12 AC Sunbury	12 NorValley	12 B 0564-8	12 All Red	12 AF 2376-3	61 MN 99352-2
13 AF 2207-4	13 V 0168-3	13 B 2079-7	13 All Sweetheart	13 AF 2493-1	62 MN 00439-1
14 NY 120	14 W 1836-3 Rus	14 not planted	14 Russet Sebaga	14 AF 2500-6	63 Rhst 00017-4
15 B 1240-1	15 W 1773-7	15 not planted	15 W 1183-P	15 AF 2440-1	64 MN 00307-1
16 Dark Red Norland	16 W1201	16 not planted	16 All Blue	16 AF 2498-3	65 W 43-11
17 Snowden	17 Dark Red Norland	17 not planted	17 German Butterball	17 AF 2502-16	66 W 52-26
18 B 1826-1	18 Atlantic	18 B 1952-2		18 AF 2499-1	67 W 37-29
19 Katahdin	19 Red Pontiac	19 not planted		19 AF 2489-1	
20 NDTX 731-1R	20 V 78-25	20 B 2029-1		20 AF 2431-2	
21 AF 1569-2	21 R. Norkotah	21 B 1752-5		21 AF 2393-3	
22 Chieftain	22 MN 19525R	22 B 1992-72		22 AF 2426-1	
23 NY 127	23 ND 3196-1R	23 S. Red Norland		23 AF 2492-2	
24 NY 126	24 ND 5822C-7	24 B 2024-10		24 AF 2502-4	
25 Atlantic	25 ND 2470-27	25 B 1870-3		25 AF 2412-6	
26 AC Red Island	26 A 9014-2	26 Cherry Red		26 AF 2386-2	
27 Kennebec	27 Stampede	27 B 1964-4		27 AF 2413-4	
28 Yukon Gold	28 MSE 221-1	28 B 1884-9		28 AF 2376-4	
29 Brise du Nord	29 MSG 227-2	29 B 1927-14		29 AF 2413-1	
30 AF 2215-1	30 B 0766-3	30 B 1829-5		30 AF 2498-1	
31 AF 1758-7		31 not planted		31 AF 2500-4	
32 NY 129		32 B 0984-1		32 ARSW99-4122-3	
33 Yukon Gold Y		33 B 2066-3		33 AF 2502-13	
34 Yukon Gold W		34 B 1990-3		34 AF 2375-1	
		35 Rideau		35 ARSW99-4120-1	
		36 B 1992-72		36 AF 2378-2	
		37 US 87-92		37 AF 2407-1	
		38 Florisant		38 MN 99383-1	
		39 Satina		39 MN 00167-1	
		40 Ida Rose		40 MN 99460-14	
		41 NY 112		41 MN 00073-2	
		42 US 17-91		42 MN 00043-1	
		43 Valisa		43 MN 00501-1	
		44 Langlade		44 MN 99144-1	
		45 Reba		45 MN 00177-6	
				46 MN 00177-5	
				47 Rhst 00056-1	
				48 COMN 98108-3	
				49 MN 00177-7	

Table 3. Yield (cwt/A) of U.S. #1-size tubers free of external defects of standard varieties grown at the OARDC in Wooster, OH 1994-2003.

	Year and yield (cwt/A)									
Variety	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Atlantic	268	214	288	216	196	152	175	213	125	240
Katahdin	312	207	339	178	205	238	204	61	103	223
Kennebec	223	180	--	188	151	118	242	184	116	225
Russet Burbank	--	--	--	--	--	--	150	41	19	151
Superior	267	184	241	245	167	165	174	66	100	218
Yukon Gold	262	204	--	170	248	174	224	165	103	135
Rainfall (inches, July-Aug.)	7.08	6.85	5.51	4.64	6.31	5.67	5.22	6.20	2.83	10.91

Table 4. Cultural, nutrient, and pest management practices for the potato germplasm evaluations completed at

Date planted	May 27 and 28, 2003	
Date harvested	September 25 and 26, 2003	
2002 main crop	soybeans	
2002 cover crop	wheat	
Fertilizer	10-20-20	600 lb/A preplant (disc-in) 600 lb/A at planting
Herbicide	Dual-Magnum (2 pt/A), Sencor (1 lb/A)	
Spacing (ft.) within, between row	1 x 3	
Plot width, length (ft.)	3 x 30	
Soil conditions at planting	moist	
Irrigation (inches)	none	
Sprays applied (all units per acre)	May 28	Dual-Magnum (2 pt), Sencor (1 lb)
	June 21	Mancozeb DF (2 lb), Copper (1 lb)
	June 27	Mancozeb DF (2 lb), Baythroid (2.5 oz)
	July 25	Mancozeb DF (2 lb), Copper (0.5 lb)
	August 1	Bravo 720 (1.5 pt)
	August 8	Baythroid (2.5 oz), Bravo 720 (1.5 pt)
	August 15	Mancozeb DF (2 lb), Copper (0.5 lb)
	September 4	Bravo 720 (1.5 pt)
	September 10	vine killer Rely (3 pt)

Table 5. Seasonal and historical climatic data for the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2003.

	May (27-30)	June	July	August	September (1-10)	September (11-26)
Avg. High Temp.(2003) (F)	68.9	76.5	82.3	82.9	76.7	74.4
Avg. Low Temp. (2003) (F)	46.7	55.5	60.2	60.9	55.3	49.8
Avg. Temp. (2003) (F)	57.8	65.7	70.8	71.3	65.0	62.3
Normal Avg. Temp. (Historical) (F)	61.9	67.6	71.5	69.9	67.1	62.5
Total Precip.(2003) (in.)	0.69	3.94	7.17	3.74	1.72	2.59
Normal Avg. Precip. (Historical) (in.)	1.13	3.94	4.10	3.63	1.09	1.59
Precip. deficit/surplus (2003)(in.)						
period	-0.44	0.00	3.07	0.11	0.63	1.00
cumulative	-0.44	-0.44	2.63	2.74	3.37	4.37

Table 6. Soil analyses for land used in the potato germplasm evaluations completed at the OARDC in Wooster, OH in 2003.

Factor	Level
pH	5.99
P (µg/g)	60
K (µg/g)	120
Ca (µg/g)	866
Mg (µg/g)	205

Soil analyses conducted at Service Testing and Analytical Research (STAR) Lab at the OARDC.

Table 7. Percent stand, maturity, yield and chip quality for entries grown in the Ohio NCR-84 Regional Project experiment in 2003.

Entry #	Entry Name	Stand %	Plant Maturity[1]	Total cwt/A	US # 1 cwt/A	US #1 %	B Size %	Cull %	Specific Gravity[2]	Chip Color[3]	Blister[4] %	Agtron 350
1	W2275-3R	93	3	267	210	79	12	10	1.064	5	30	23.2
2	R. Burbank	95	6	245	129	53	9	38	1.077	5	20	17.9
3	V 0379-2	86	2	258	178	69	10	21	1.075	5	10	23.5
4	MN 15620R	58	6	271	198	73	12	15	1.074	5	0	24.0
5	MN 18747 LW	86	3	250	198	79	3	18	1.064	4	10	27.4
6	MSE 202-3 Rus	73	8	266	172	65	14	22	1.080	5	10	16.5
7	MSH 031-5	84	3	289	220	76	9	15	1.079	5	20	22.9
8	V 0056-1	89	4	271	206	76	2	22	1.060	4	10	34.9
9	CV 89023-2R	90	4	230	182	79	4	17	1.067	5	30	18.5
10	MN 18710 Rus	92	8	249	209	84	5	11	1.074	5	20	18.8
11	Snowden	93	9	266	204	77	4	19	1.088	3	10	44.1
12	NorValley	68	5	243	180	74	5	21	1.078	3.5	0	41.0
13	V 0168-3	91	2	258	214	83	2	15	1.063	5	0	18.2
14	W 1836-3 Rus	87	8	272	214	79	5	16	1.078	5	10	22.0
15	W 1773-7	86	6	291	230	79	4	17	1.080	4	0	38.1
16	W1201	91	8	279	225	81	4	15	1.079	4	0	30.7
17	Dark Red Norland	95	2	263	192	73	8	19	1.068	5	0	23.2
18	Atlantic	82	7	267	235	88	2	10	1.075	4	10	35.2
19	Red Pontiac	95	4	271	191	71	2	27	1.062	5	10	15.1
20	V 78-25	84	2	282	237	84	2	14	1.067	4	10	40.6
21	R. Norkotah	92	2	273	190	70	7	24	1.063	5	10	18.4
22	MN 19525R	89	5	244	161	66	9	25	1.068	5	40	17.3
23	ND 3196-1R	72	1	254	182	72	7	21	1.065	5	30	21.1
24	ND 5822C-7	94	6	273	212	78	4	18	1.075	4	40	35.9
25	ND 2470-27	69	4	273	207	76	2	22	1.074	3	50	40.3
26	A 9014-2	79	5	208	154	74	4	22	1.076	4	30	36.3
27	Stampede	71	3	281	226	80	7	13	1.060	5	40	18.2
28	MSE 221-1	72	3	268	208	78	5	18	1.059	5	40	10.8
29	MSG 227-2	80	8	253	187	74	4	22	1.075	4	10	34.1
30	B 0766-3	74	7	290	167	58	6	37	1.068	3.5	10	41.2
	Average	84	5	263	197	75	6	19	1.071	4	17	27

[1] Scale of 1-9 (See reference table for rating system on page 15.)

[2] See reference table on page 16 for starch and dry matter conversions.

[3] SFA Standard (1 = light, 5 = dark).

[4] Percentage of chips that developed blisters greater than 20 mm in diameter during the frying process.

Table 8. Tuber characteristics for entries grown in the Ohio NCR-84 Regional Project experiment in 2003.

		External[1]					Internal[2]			
Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Hollow Heart	Vascular Discoloration	Internal Necrosis	% Defected tubers
1	W2275-3R	2	7	1	9	5	0	0	0	0
2	R. Burbank	5	3	6	9	4	3	0	0	30
3	V 0379-2	7	8	2	9	4	3	0	0	30
4	MN 15620R	3	8	6	9	5	0	0	0	0
5	MN 18747 LW	7	7	4	5	5	0	0	0	0
6	MSE 202-3 Rus	6	6	5	7	6	0	0	0	0
7	MSH 031-5	7	7	3	7	4	0	0	0	0
8	V 0056-1	6	6	3	2	3	2	0	0	20
9	CV 89023-2R	2	7	3	7	5	0	0	0	0
10	MN 18710 Rus	5	5	5	7	6	0	0	0	0
11	Snowden	6	6	3	6	5	2	0	0	20
12	NorValley	7	7	3	7	6	0	0	0	0
13	V 0168-3	6	8	4	7	6	0	0	0	0
14	W 1836-3 Rus	5	3	4	9	4	0	0	0	0
15	W 1773-7	5	6	3	7	4	0	0	0	0
16	W1201	7	7	2	5	5	0	0	0	0
17	Dark Red Norland	2	6	3	7	3	0	0	0	0
18	Atlantic	7	7	2	8	5	0	0	0	0
19	Red Pontiac	3	7	2	5	4	0	0	0	0
20	V 78-25	7	7	2	6	7	0	0	0	0
21	R. Norkotah	5	4	6	8	8	0	0	0	0
22	MN 19525R	2	6	2	8	5	0	0	0	0
23	ND 3196-1R	2	7	3	5	4	1	0	0	10
24	ND 5822C-7	7	7	2	9	6	0	0	0	0
25	ND 2470-27	7	8	2	7	5	0	0	0	0
26	A 9014-2	4	3	6	9	6	0	0	0	0
27	Stampede	5	4	7	8	6	0	0	0	0
28	MSE 221-1	6	6	2	7	4	0	0	0	0
29	MSG 227-2	5	5	3	9	4	0	0	0	0
30	B 0766-3	6	7	2	7	4	0	0	0	0

[1] See reference table for rating system on page 15.

[2] Number of tubers out of 10 that contain the defect.

Table 9. Percent stand, maturity, yield and chip quality for entries grown in the Ohio NE-1014 Regional Project experiment in 2003.

Entry #	Entry Name	Stand %	Plant Maturity[1]	Total cwt/A	US # 1 cwt/A	US #1 %	B Size %	Cull %	Specific Gravity[2]	Chip Color[3]	Blister[4] %	Agtron 350
1	AF 1455-20	79	8	280	220	79	5	17	1.079	4	0	32
2	Aquilon	89	7	202	164	81	6	13	1.080	4	0	38
3	AF 1938-3	80	5	244	183	75	3	22	1.076	4	0	44
4	NY 128	89	8	254	196	77	4	19	1.072	4	10	29
5	AF 2115-1	84	3	281	214	76	3	21	1.079	4	10	23
6	NY 125	86	3	265	218	82	2	15	1.060	3.5	10	51
7	B 1806-8	78	5	243	215	88	3	9	1.075	4	20	36
8	Envol	73	1	248	181	73	3	25	1.070	5	0	22
9	AF 1775-2	94	8	249	173	69	1	30	1.074	4	0	36
10	AF 2222-2	93	3	308	242	78	4	18	1.066	3.5	10	45
11	Superior	94	2	270	210	78	3	19	1.070	5	10	22
12	AC Sunbury	70	3	274	197	72	3	25	1.080	4.5	0	23
13	AF 2207-4	82	6	300	249	83	7	10	1.080	3	10	51
14	NY 120	83	2	270	190	70	6	24	1.078	4	20	41
15	B 1240-1	77	9	276	233	84	3	13	1.080	3.5	20	40
16	Dark Red Norland	87	2	252	179	71	4	25	1.063	5	0	20
18	B 1826-1	66	4	280	220	79	3	19	1.072	3	0	51
19	Katahdin	81	5	281	215	76	3	21	1.070	5	10	19
20	NDTX 731-1R	84	3	270	210	78	7	15	1.060	5	10	18
21	AF 1569-2	78	3	281	236	84	7	9	1.073	4.5	10	24
22	Chieftain	88	3	271	207	76	6	18	1.063	5	0	17
23	NY 127	88	4	291	204	70	4	26	1.076	3.5	30	36
24	NY 126	78	4	304	242	80	2	18	1.074	4	0	36
26	AC Red Island	76	4	298	222	75	7	18	1.076	4	10	22
27	Kennebec	77	4	303	213	70	4	26	1.071	5	10	15
28	Yukon Gold	74	3	192	135	70	0	30	1.078	4	0	24
29	Brise du Nord	86	7	191	133	70	1	29	1.075	5	0	19
30	AF 2215-1	92	5	190	157	83	1	17	1.076	3	10	42
31	AF 1758-7	96	5	192	147	76	2	22	1.060	5	10	22
32	NY 129	71	6	192	179	94	3	4	1.066	4	0	23
	Average	82	4	268	206	77	4	19	1.073	4	8	31

[1] See reference table for rating system on page 15.

[2] See reference table on page 16 for starch and dry matter conversions.

[3] SFA Standard (1 = light, 5 = dark).

[4] Percentage of chips that developed blisters greater than 20 mm in diameter during the frying process.

Table 10. Tuber characteristics for entries grown in the Ohio NE-1014 Regional Project experiment in 2003.

		External[1]					Internal[2]			
Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Hollow Heart	Vascular Discoloration	Internal Necrosis	% Defected Tubers
1	AF 1455-20	7	7	2	5	6	0	0	0	0
2	Aquilon	6	7	3	5	4	0	0	0	0
3	AF 1938-3	6	6	3	6	3	0	0	0	0
4	NY 128	6	6	2	4	3	0	0	0	0
5	AF 2115-1	6	7	4	3	3	0	0	0	0
6	NY 125	7	7	4	3	4	0	0	0	0
7	B 1806-8	6	6	3	5	4	1	0	0	10
8	Envol	6	6	3	7	3	0	0	0	0
9	AF 1775-2	7	6	3	5	4	0	0	0	0
10	AF 2222-2	7	6	2	6	4	2	0	0	20
11	Superior	7	8	4	4	4	0	0	0	0
12	AC Sunbury	6	7	4	5	4	0	0	0	0
13	AF 2207-4	6	6	3	9	3	0	0	0	0
14	NY 120	6	6	2	5	6	0	0	0	0
15	B 1240-1	6	5	2	8	7	0	0	0	0
16	Dark Red Norland	2	7	4	3	4	0	0	0	0
18	B 1826-1	6	7	2	8	5	0	0	0	0
19	Katahdin	7	7	4	9	4	0	0	0	0
20	NDTX 731-1R	2	9	2	5	6	0	0	0	0
21	AF 1569-2	6	6	3	8	5	0	0	0	0
22	Chieftain	3	7	3	8	4	0	0	0	0
23	NY 127	6	8	2	6	4	0	0	0	0
24	NY 126	6	6	4	4	5	0	0	0	0
26	AC Red Island	2	7	4	5	4	0	0	0	0
27	Kennebec	7	8	5	8	3	0	0	0	0
28	Yukon Gold	6	8	3	7	4	0	0	0	0
29	Brise du Nord	3	7	5	8	3	0	0	0	0
30	AF 2215-1	7	7	3	7	5	0	0	0	0
31	AF 1758-7	7	8	4	8	4	0	0	0	0
32	NY 129	2	6	2	7	4	0	0	0	0

[1] See reference table for rating system on page 15.

[2] Number of tubers out of 10 that contain the defect.

Table 11. Percent stand, maturity, yield, and chip quality for entries grown in the Ohio Observations Plots and selected for chipping quality evaluation in 2003.

Entry #	Entry Name	Stand %	Plant Maturity[1]	Total cwt/A	US # 1 cwt/A	US #1 %	B Size cwt/A	B Size %	Cull cwt/A	Cull %	Specific Gravity[2]	Chip Color[3]	Blister[4] %	Agtron 350
Triple Observation														
2	B 1763-4	94	2	276	201	79	1	3	4	18	1.072	4	0	26
4	B 1758-4	80	2	280	173	63	5	20	4	17	1.06	5	0	16
5	B 1523-4	96	5	293	218	71	6	20	3	9	1.072	4	0	26
6	B 2078-1	92	1	264	199	69	1	3	8	28	1.069	5	0	24
7	B 2079-6	91	1	281	179	73	4	15	3	12	1.06	5	0	16
11	B 0811-4	94	7	322	199	66	4	14	6	20	1.077	3	10	46
12	B 2135-163	92	2	302	173	65	7	28	2	7	1.074	3.5	10	40
24	B 2024-10	83	3	304	164	73	1	3	5	25	1.069	5	10	13
28	B 1884-9	67	9	309	154	79	1	8	3	14	1.074	3	10	44
29	B 1927-14	70	4	261	199	85	1	4	3	12	1.075	4	0	35
30	B 1829-5	87	4	285	233	85	1	3	3	12	1.077	4	0	42
32	B 0984-1	90	4	256	260	77	1	3	7	21	1.075	4	0	36
37	US 87-92	93	4	273	190	82	0	2	4	16	1.076	2	20	50
42	US 17-91	82	2	308	149	74	1	5	4	21	1.072	2.5	20	49
	Average	87	4	287	192	74	2	9	4	16	1.072	4	6	33
Double Observation														
1	B 2259-3	86.5	9	276	18	71	2	10	5	19	1.065	5	10	21
4	B 2177-52	88	2	280	20	76	2	8	4	16	1.073	4	10	41
5	B 2246-14	95	3	293	23	84	2	8	2	8	1.071	5	0	23
7	Red Pearl	91.5	3	264	19	75	3	14	3	11	1.065	4	10	31
	Average	90	4	278	20	20	3	10	4	14	1.069	5	8	29
Single Observation														
5	AF 2497-2	90	9	281	20	75	2	7	5	18	1.078	3	0	49
16	AF 2498-3	80	7	322	25	83	2	5	4	12	1.074	4	0	37
38	MN 99383-1	90	7	302	23	82	1	4	4	14	1.073	5	10	17
39	MN 00167-1	83	1	304	25	87	1	3	3	10	1.065	5	10	14
43	MN 00501-1	83	6	309	22	77	1	2	6	21	1.068	4	10	29
57	MN 99158-1	87	8	261	20	80	2	7	3	13	1.074	4.5	0	21
67	W 37-29	90	4	285	21	79	2	9	3	12	1.074	3	10	48
	Average	86	6	295	22	80	1	5	4	14	1.072	4	6	31

[1] Scale of 1-9 (See reference table for rating system on page 15.)

[2] See reference table on page 16 for starch and dry matter conversions.

[3] SFA Standard (1 = light, 5 = dark).

[4] Percentage of chips that developed blisters greater than 20 mm in diameter during the frying process.

Table 12. Tuber characteristics for entries grown in the Ohio Observations Plots and selected for chipping quality evaluation in 2003.

		External[1]					Internal[2]			
Entry #	Entry Name	Skin Color	Skin Texture	Tuber Shape	Eye Depth	Overall Appearance	Hollow Heart	Vascular Discoloration	Internal Necrosis	% Defected tubers
Triple Observation										
2	B 1763-4	1	7	3	8	5	0	0	0	0
4	B 1758-4	2	8	2	3	4	1	0	0	10
5	B 1523-4	2	6	2	7	4	0	0	0	0
6	B 2078-1	2	8	1	4	7	0	0	0	0
7	B 2079-6	2	8	2	8	6	0	0	0	0
11	B 0811-4	6	6	2	9	7	1	0	0	10
12	B 2135-163	7	6	2	5	5	0	1	0	10
24	B 2024-10	7	8	3	8	5	0	0	0	0
28	B 1884-9	6	5	2	8	4	0	0	0	0
29	B 1927-14	7	8	2	8	4	1	0	0	10
30	B 1829-5	7	8	2	9	5	0	0	0	0
32	B 0984-1	2	8	3	9	5	0	1	0	10
37	US 87-92	6	5	4	9	5	3	0	0	30
42	US 17-91	7	8	5	9	6	0	1	0	10
Double Observation										
2	B 2259-3	6	6	2	7	4	1	0	0	10
3	B 2177-52	6	5	3	9	4	4	0	0	40
12	B 2246-14	6	5	3	7	4	0	0	0	0
18	Red Pearl	2	7	2	6	4	0	0	0	0
Single Observation										
5	AF 2497-2	7	8	3	6	6	0	0	0	0
16	AF 2498-3	6	5	2	7	7	0	1	0	10
38	MN 99383-1	7	8	2	5	5	1	0	0	10
39	MN 00167-1	2	7	2	9	7	0	0	0	0
43	MN 00501-1	6	5	3	8	7	2	0	0	20
57	MN 99158-1	6	5	1	5	7	1	1	0	20
67	W 37-29	5	5	2	6	6	1	0	0	10

[1] See reference table for rating system on page 15.

[2] Number of tubers out of 5 or 10 that contain the defect in the Single and Double Observations, respectively.

Table 13. Percent stand, maturity, and total yield for entries grown in the Ohio Observations Plots but not selected for chipping quality evaluation in 2003.

	Entry #	Entry Name	% Stand	Plant Maturity	Total cwt/A
NE	33	Yukon Gold Y	84	3	351
NE	34	Yukon Gold W	81	6	369
OBT	3	B 1145-2	83	1	213
OBT	8	B 2100-13	70	4	419
OBT	9	B 2008-34	86	2	307
OBT	10	B 0811-4	98	1	227
OBT	13	B 2079-7	92	1	389
OBT	18	B 1952-2	91	4	372
OBT	20	B 2029-1	92	2	400
OBT	21	B 1752-5	82	2	282
OBT	22	B 1992-72	90	5	319
OBT	23	S. Red Norland	90	1	287
OBT	26	Cherry Red	84	2	378
OBT	27	B 1964-4	75	2	351
OBT	33	B 2066-3	82	5	413
OBT	34	B 1990-3	92	6	476
OBT	35	Rideau	92	2	454
OBT	36	B 1992-72	87	5	317
OBT	38	Florisant	79	6	508
OBT	39	Satina	83	8	466
OBT	40	Ida Rose	18	9	193
OBT	41	NY 112	63	8	373
OBT	43	Valisa	94	3	354
OBT	44	Langlade	81	5	382
OBT	45	Reba	96	5	399
OBD	2	B 1999-175	90	5	346
OBD	3	B 2001-184	87	6	381
OBD	6	B 2229-4	77	1	276
OBD	8	MacIntosh Black	100	4	198
OBD	9	All Blue	100	3	205
OBD	10	Huckleberry	92	5	481
OBD	11	Magic Molly	100	4	204
OBD	12	All Red	77	4	212
OBD	13	All Sweetheart	92	7	222
OBD	14	Russet Sebaga	80	8	314
OBD	15	W 1183-P	85	3	293
OBD	16	All Blue	92	6	193
OBD	17	German Butterball	82	4	254
OBS	1	AF 2412-2	67	4	246
OBS	2	AF 2432-1	80	5	377
OBS	3	AF 2204-1	80	4	309
OBS	4	AF 2502-6	93	7	235
OBS	6	AF 2427-1	47	4	196
OBS	7	AF 2393-5	93	1	358
OBS	8	AF 2393-7	100	1	236
OBS	9	AF 2498-6	50	8	227
OBS	10	AF 2508-8	90	5	375
OBS	11	AF 2525-1	63	5	118
OBS	12	AF 2376-3	73	9	222
OBS	13	AF 2493-1	87	9	577
OBS	14	AF 2500-6	93	9	478
OBS	15	AF 2440-1	83	5	346
OBS	17	AF 2502-16	97	4	308
OBS	18	AF 2499-1	100	7	497
OBS	19	AF 2489-1	80	7	231
OBS	20	AF 2431-2	87	7	346
OBS	21	AF 2393-3	60	1	243
OBS	22	AF 2426-1	37	8	292
OBS	23	AF 2492-2	93	7	248
OBS	24	AF 2502-4	83	5	375
OBS	25	AF 2412-6	60	5	403
OBS	26	AF 2386-2	97	5	505
OBS	27	AF 2413-4	90	7	545
OBS	28	AF 2376-4	90	6	492
OBS	29	AF 2413-1	83	5	305
OBS	30	AF 2498-1	93	6	365
OBS	31	AF 2500-4	77	9	420
OBS	32	ARSW99-4122-3	97	2	319
OBS	33	AF 2502-13	67	5	280
OBS	34	AF 2375-1	90	9	357
OBS	35	ARSW99-4120-1	87	4	235
OBS	36	AF 2378-2	83	4	450
OBS	37	AF 2407-1	87	1	348
OBS	40	MN 99460-14	97	4	252
OBS	41	MN 00073-2	50	4	182
OBS	42	MN 00043-1	77	7	366
OBS	44	MN 99144-1	73	2	427
OBS	45	MN 00177-6	60	7	194
OBS	46	MN 00177-5	40	6	260
OBS	47	Rhst 00056-1	83	5	322
OBS	48	COMN 98108-3	83	7	374
OBS	49	MN 00177-7	90	9	260
OBS	50	COMN 98109-1	73	5	374
OBS	51	MN 00467-4	73	7	436
OBS	52	MN 00441-1	57	7	239
OBS	53	MN 00317-1	33	5	172
OBS	54	MN 99380-1	77	3	311
OBS	55	MN 99460-21	80	6	289
OBS	56	MN 99291-3	90	6	307
OBS	58	MN 99106-1	53	5	288
OBS	59	MN 99456-2	73	6	303
OBS	60	MN 000441-1	70	6	321
OBS	61	MN 99352-2	67	4	135
OBS	62	MN 00439-1	83	5	234
OBS	63	Rhst 00017-4	77	7	285
OBS	64	MN 00307-1	70	4	169
OBS	65	W 43-11	50	4	297
OBS	66	W 52-26	83	3	253

TUBER DATA RATING SYSTEM

Tuber Skin Color
1. Purple
2. Red
3. Pink
4. Dark Brown
5. Brown
6. Tan
7. Buff
8. White
9. Cream

Skin Texture
1. Part. russet
2. Heavy russet
3. Mod. russet
4. Light russet
5. Netted
6. Slight netting
7. Moderately
8. Smooth
9. Very smooth

Tuber Shape
1. Round
2. Mostly round
3. Round to oblong
4. Mostly oblong
5. Oblong to long
6. Mostly long
7. Long
8. Cylindrical

Eye Depth
1. VD
2. --
3. D
4. --
5. Intermediate
6. --
7. S
8. --
9. VS

Appearance
1. Very poor
2. --
3. Poor
4. --
5. Fair
6. --
7. Good
8. --
9. Excellent

PLANT RATING SYSTEM

Plant Type
1. Decumbent-poor canopy
2. Decumbent-fair canopy
3. Decumbent-good canopy
4. Spreading-poor canopy
5. Spreading-fair canopy
6. Spreading-good canopy
7. Upright-poor canopy
8. Upright-fair canopy
9. Upright-good canopy

Air Pollution
0. Dead
1. Decreasing plant appearance
2. with varying degrees
3. of defoliation
4.
5. most leaves have symptoms, but generally appearance is still good
6. good plant condition with decreasing
7. percent of foliar symptoms
8.
9. no symptoms

Plant size
1. Very small
2. +
3. Small
4. +
5. Medium
6. +
7. Large
8. +
9. Very large

Plant Maturity
1. Very early
2. Early
3. +
4. Medium early
5. Medium
6. Medium late
7. +
8. Late
9. Very late

Plant Appearance
1. Very poor
2. Poor
3. +
4. --
5. Fair
6. +
7. --
8. Good
9. Excellent

Conversion Table for Specific Gravity of Potato Tubers to Content of Starch and Dry Matter % (Calculated from Von Scheele equations: % starch = 17.565 + 199.07 (Sp. Gr.-1.0988); % dry matter = 24.181 + 211.04 (Sp. Gr.-1.0988)

Specific Gravity	Starch %	Dry Matter %	Specific Gravity	Starch %	Dry Matter%
1.050	7.85	13.88	1.081	14.02	20.43
1.051	8.05	14.09	1.082	14.22	20.64
1.052	8.25	14.31	1.083	14.42	20.85
1.053	8.45	14.32	1.084	14.62	21.06
1.054	8.65	14.73	1.085	14.82	21.27
1.055	8.85	14.94	1.086	15.02	21.48
1.056	9.04	15.15	1.987	15.22	21.69
1.057	9.24	15.38	1.088	15.41	21.90
1.058	9.44	15.57	1.089	15.61	22.11
1.059	9.64	15.78	1.090	15.81	22.33
1.060	9.84	15.99	1.091	16.01	22.54
1.061	10.04	16.21	1.092	16.20	22.75
1.062	10.24	16.42	1.093	16.41	22.96
1.063	10.44	16.63	1.094	16.61	23.17
1.064	10.64	16.84	1.095	16.81	23.38
1.065	10.84	17.05	1.096	17.01	23.59
1.066	11.04	17.26	1.097	17.21	23.89
1.067	11.23	17.47	1.098	17.41	24.01
1.068	11.43	17.68	1.099	17.60	24.22
1.069	11.63	17.89	1.100	17.80	24.44
1.070	11.83	18.10	1.101	18.00	24.65
1.071	12.03	18.32	1.102	18.20	24.86
1.072	12.23	18.53	1.103	18.40	25.07
1.073	12.43	18.74	1.104	18.60	25.28
1.074	12.63	18.95	1.105	18.80	25.49
1.075	12.83	19.16	1.106	19.00	25.70
1.076	13.03	19.37	1.107	19.20	25.91
1.077	13.22	19.58	1.180	19.40	26.12
1.078	13.42	19.79	1.109	29.60	26.34
1.079	13.62	20.00	1.110	19.79	26.55
1.080	13.82	220.21	1.111	19.99	26.76

Factors Affecting the Specific Gravity of the White Potato in Maine. Maine Agricultural Experiment Station. Bulletin 583. May 1959.

2003 Potato Germplasm Evaluation

Crop Observations Taken At Harvest

Observations made at harvest by David Kelly and Matthew Kleinhenz

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
A 9014-2	NC	26	ov-ob	med-hvy rus			v sz	irr surf	lenticels; knobs; growth cracks; 2nd growth; misshapen	nf
Atlantic	NC	18	r-ob	lt tan	med-hvy net		v sz	irr surf	indented apical; stolons; lenticels; scab; 2nd growth; knobs; growth cracks	poss for proc
B 0766-3	NC	30	r-ov	buff/lt tan	lt net		v sz	irr surf	**scab**; misshapen; growth cracks; poor appearance	nf
CV 89023-2R	NC	9	ov-r	lt-med red	tex skin			irr surf	trace knobs; stolons; trace 2nd growth; growth cracks	try agn
MN 15620R	NC	4	r-ov-ob	lt pink w/red eyes		v sh	v sz	irr surf	knobs; eyes redder than skin; misshapen; 2nd growth	nf
MN 18710 Rus	NC	10	r-ov-ob	med rus	med-hvy net	v sh	v sz	irr surf	lenticels; curved tubers	nf
MN 18747 LW	NC	5	r-l	buff		v sh	v sz	irr surf on lg tubers	poor appearance; indented eyes; misshapen; curved tubers	nf
MN 19525R	NC	22	r-ov	lt-med red		v sh	v sz	irr surf	growth cracks; knobs; misshapen	df/nf
MSE 202-3 Rus	NC	6	r-ov-ob	buff-tan	slt net		v sz	irr surf	scab; lenticels; growth cracks; 2nd growth; misshapen; "white russet"	nf
MSE 221-1	NC	28	r-ov	lt tan	lt net	unfm sh	v sz	irr surf	2nd growth; growth cracks; scab	df/nf
MSG 227-2	NC	29	r-ov	tan	lt net	v sh;flat	v sz	irr surf	scab	df/nf
MSH 031-5	NC	7	r-ov-ob	buff		v sh;flat	v sz		scab (pitted); trace knobs	df/nf
ND 2470-27	NC	25	r-ov	buff			v sz		scab; indented apical	try for proc
ND 3196-1R	NC	23	r-ov	deep-med red	smooth surf		v sz	irr surf	shallow eyes; knobs	try agn
ND 5822C-7	NC	24	r-ov	buff	smooth	unfm sh	v sz	irr surf	growth cracks; trace scab; indented apical; lenticels	yld up; df
NorValley	NC	12	r-ov	buff		flat tubers	v sz		trace growth crack, knobs; 2nd growth; misshapen; pitted, surface scab	try for proc
R. Burbank	NC	2	r-ov-ob	lt-med rus		v sh	v sz		misshapen; 2nd growth; knobs	nf
R. Norkotah	NC	21	ov-ob	hvy rus	med-hvy net	v sh	v sz	irr surf	prominent eyes; 2nd growth; misshapen; knobs; scab	df/nf
Red Norland	NC	17	ov-r	lt red				irr surf	knobs; stolons; 2nd growth; misshapen; poor appearance	nf
Red Pontiac	NC	19	r-ov-ob	lt red/pink		v sh	v sz	irr surf	2nd growth; knobs; misshapen; lenticels; growth cracks	nf; yld up
Snowden	NC	11	r-ov	buff-tan	med-hvy net	unfm sh	v sz	irr surf	deep eyes; indented, folded apical; scab	try for proc
Stampede	NC	27	ov-ob	med rus/tan	hvy net		v sz	irr surf	knobs; curved tubers; 2nd growth	df/nf
V 0056-1	NC	8	r-ov	tan	lt-med net	flat tubers	v sz	irr surf	scab; knobs; lenticels; large tubers misshapen	df/nf
V 0168-3	NC	13	ov-ob	lt rus/tan	med net		v sz	irr surf	surface scab; folded apical; stolons; growth cracks	df/nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
V 0379-2	NC	3	r-ov	buff; lt tan		v sh	v sz	irr surf	scab; deep eyes ;folded ends; 2nd growth; knobs; misshapen	nf
V 78-25	NC	20	r/slightly	buff	smooth	unfm sh	unfm sz		indented apical; stolons; eyes moderately deep	good app; try agn
W 1773-7	NC	15	r-ov-ob	buff-tan	lt-med net	v sh	v sz	irr surf	knobs; surface scab	df/nf
W 1836-3 Rus	NC	14	ov-ob	lt-med red/rus	net		v sz	irr surf	lenticels; 2nd growth; knobs	df/nf
W1201	NC	16	ov-r	tan	lt-med net	flat tubers	lg tubers	irr surf	trace scab; knobs; misshapen; stolons; lenticels; 2nd growth	try for proc
W2275-3R	NC	1	r-ov	med red			B sz		trace scab; shallow eyes; questionable color	yld up; try agn
AC Red Island	NE	26	r-ov-ob	lt-med red	tex skin		v sz	irr surf	knobs; misshapen; lenticels	nf
AC Sunbury	NE	12	r-ov	lt tan/cream	slt net			irr surf	deep apical; some folded; scab; misshapen	df/nf
AF 2207-4	NE	13	r-ov	lt tan	lt net	unfm sh	unfm sz	irr surf	misshapen; growth cracks; **scab**	nf (scab)
AF 1455-20	NE	1	r-ov	lt tan	lt net	unfm sh;flat	v sz		lenticels; scab; folded apical	nf/try for proc
AF 1569-2	NE	21	r-ov	lt tan	lt net	flat	v sz		trace misshapen; trace knobs; **scab**	nf/try for proc
AF 1758-7	NE	31	r-ov-ob	tan/buff	lt net	v sh	v sz	irr surf	scab; misshapen; stolons	nf
AF 1775-2	NE	9	r-ov-ob	buff-tan		v sh		irr surf	scab; misshapen; lenticels; 2nd growth; sprouting	df/nf
AF 1775-2	NE	9	r-ov-ob	buff					knobs; growth cracks; misshapen; poor appearance	nf
AF 1938-3	NE	3	r-ov	buff/lt tan	lt net			irr surf	misshapen; scab	nf
AF 2115-1	NE	5	r-ov-ob	buff		flat		irr surf	misshapen; knobs; deep apical; lenticels; scab; stolons	nf
AF 2215-1	NE	30	r-ov	lt tan	lt-med net		v sz		lenticels; scab; shallow eyes; deep apical	try agn/df
AF 2222-2	NE	10	r	buff	lt net		unfm sz (med)		trace scab	try agn
Aquilon	NE	2	r-ov	buff/lt tan	lt net/smooth	v sh; flat	unfm sz	trace irr surf	scab; misshapen; lenticels; 2nd growth; stolons	try agn/df
B 1240-1	NE	15	r-ov	buff	lt net		lg tubers	irr surf	folded apical; misshapen; deep apical; knobs	df/nf
B 1806-8	NE	7	r-ov	lt-med tan	lt net	lg tubers ob			stolons; misshapen; lenticels; trace surface scab	try agn/df
B 1826-1	NE	18	r-ov	buff/lt tan	lt net	flat	v sz	irr surf	scab; **lenticels**	df/nf
Brise du Nord	NE	29	r-ov-ob	lt red			v sz		knobs; 2nd growth; misshapen; growth cracks; lenticels	nf
Chieftain	NE	22	r-ov	lt red		flat	v sz	irr surf	folded apical; misshapen; stolons	nf
Dark Red Norland	NE	16	r-ov	deep-med red	tex skin	unfm sh; flat	unfm sz	irr surf; smooth	trace misshapen; lenticels	try agn/df
Envol	NE	8	r-ov	buff	smooth	flat	v sz		knobs	nf/try agn
Katahdin	NE	19	r-ov	lt tan		v sh; flat	v sz	irr surf	stolons; folded apical; scab; lenticels	df
Kennebec	NE	27	r-ov-ob	buff		v sh	v sz		misshapen; 2nd growth; knobs; lenticels	nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
NDTX 731-1R	NE	20	r-ov	deep-med red	smooth surf	unfm sh; flat		irr surf	folded apical; misshapen; shallow eyes; poor/good appearance	try agn/nf
NY 120	NE	14	r	lt tan	lt-med net	unfm sh		smooth surf	trace scab	try for proc
NY 125	NE	6	r-ov-ob	buff-tan	lt net				scab; misshapen	nf/try agn
NY 126	NE	24	r-ov	tan	med-hvy net	v sh; flat	v sz	irr surf	growth cracks; stolons; knobs; folded ends; trace scab	df/nf
NY 127	NE	23	r-ov	buff/lt tan	lt net	flat		irr surf	lenticles; **scab**; deep, folded apical	df
NY 128	NE	4	r-ov	lt tan	light-med net			irr surf	scab; misshapen; 2nd growth; stolons; deep apical	nf/try for proc
NY 129	NE	32	r	med red	tex skin	unfm sh		smooth surf	lenticels; **scab**; stolons	try agn
Superior	NE	11	ov-ob	buff	lt net	flat		irr surf	folded apical; misshapen; deep eyes, apical	df/nf
Yukon Gold	NE	28	r-ov-ob	tan	lt net	v sh	v sz	irr surf	folded apical; stolons; knobs; **scab**	nf
Yukon Gold W	NE	34	r-ov-ob	lt rus		v sh	v sz	irr surf	knobs; 2nd growth; misshapen; folded, deep apical; curved; scab	nf
Yukon Gold Y	NE	33	r-ov-ob	med tan	lt net	v sh; flat	v sz	smooth surf	folded apical; poor appearance	nf/try for proc
B 0564-8	OBT	12	r	tan	med-hvy net	blksh tuber		fairly smooth surf	scab; folded, indented apical; deep eyes	try for proc
B 0811-4	OBT	10	r-ov	lt-med red				irr surf	shallow eyes; deep apical; # B's up; stolons	nf
B 0984-1	OBT	32	r-ov	lt-dark red			v sz		trace knobs; deep, shallow eyes; scab; folded apical	nf/try agn
B 1145-2	OBT	3	r	lt red/pink	tex skin		med sz	smooth	indented apical; indented eyes	nf
B 1523-4	OBT	5	r-ov	lt-med red	tex skin	flat	v sz		stolons; folded end; high # of B's	nf/ try agn
B 1752-5	OBT	21	r-ov	med tan/cream	slt net		v sz		deep apical; **scab**; knobs	nf
B 1758-4	OBT	4	r-ov	lt-med red	smooth	unfm sh; flat	unfm/v sz		growth cracks; knobs; folded apical	nf/ try agn
B 1763-4	OBT	2	r-ov	med-dark pur	smooth surf		v sz	irr surf	shallow eyes; shallow apicals; knobs; lenticels; low yield	nf/try agn
B 1829-5	OBT	30	r/slightly	lt tan	med net	unfm sh	unfm/v sz	smooth surf	indented apical; shallow eyes; scab; stolons; poor appearance	nf/try agn
B 1870-3	OBT	25	r-ov	buff-tan	slt net				infected lenticels; **SCAB**; deep apical on large tubers	nf
B 1884-9	OBT	28	r-ov	tan	hvy net,rgh skin	blksh	unfm sz	**irr surf**	**scab**; growth cracks; deep apical, eyes; stolons	nf/try agn
B 1927-14	OBT	29	r ov	buff/lt tan	lt net		med sz		deep, folded apical; stolons	nf/try for proc
B 1952-2	OBT	18	r-ov	med pur			v sz; lg	irr surf	folded apical; trace misshapen; deep eyes; stolons; lenticels; poor appearance	nf
B 1964-4	OBT	27	r-ov-ob	lt-med tan	slt net	v sh	v sz	irr surf	surface scab; knobs on large tubers	nf
B 1990-3	OBT	34	r-ov-ob	tan	med net	v sh	wide sz rge		lenticels enlarged; deep eyes; surface scab; growth cracks; 2nd growth	nf
B 1992-72	OBT	22	r-ov	lt tan	net		v sz (med)	irr surf	deep apical; scab; stolons; 2nd growth	nf
B 1992-72	OBT	36	r-ov	tan	lt net		v sz	irr surf	2nd growth; stolons; scab; misshapen	nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
B 2008-34	OBT	9	r-ov	buff/lt tan		v sh		irr surf	folded apical; scab; stolons	nf
B 2024-10	OBT	24	r-ov	med tan/cream	smooth surf	unfm sh	unfm sz		shallow eyes; shallow apical; trace scab	try agn
B 2029-1	OBT	20	r-ov-ob	lt-med red/buff	tex skin	v sh	v sz	irr surf	pink eyes; knobs; 2nd growth; growth cracks; deep eyes	nf
B 2066-3	OBT	33	r-ov	lt-med red			v sz	irr surf	shallow eyes; deep apical; red color is poor; growth cracks; stolons	nf
B 2078-1	OBT	6	r	med-dark red	smooth	unfm sh	med sz		indented apical; large tubers misshapen	good app; try agn
B 2079-6	OBT	7	r	med-dark red	smooth surf	unfm sh	med sz		shallow eyes; shallow apical	good color; try agn
B 2079-7	OBT	13	r-ov	lt red; pinkish	smooth surf	unfm sh	unfm sz		shallow eyes; misshapen	nf (color)
B 2100-13	OBT	8	r-ov	lt-med red	tex skin	pear sh	wide sz rge		misshapen; 2nd growth; knobs; deep apical; stolons; growth cracks	nf
B 2135-163	OBT	11	r-ov	lt tan	lt net; smooth	unfm sh	unfm sz	trace irr surf	shallow eyes, apical	try for proc
Cherry Red	OBT	26	r-ov	lt-med red	tex skin	flat tubers	v sz	irr surf	deep apical; knobs; skin too light	nf
Florisant	OBT	38	r-ov	buff/lt tan			sm	irr surf	stolons; misshapen; 2nd growth; high # B's; **scab**	nf
Ida Rose	OBT	40	r-ov	med red	med tex; smooth	flat	v sz	irr surf	**scab**; growth cracks; stolons	nf
Langlade	OBT	44	r-ov	buff/lt tan	lt-med net	v sh; flat	v sz	irr surf	scab; deep, folded apical	nf
NY 112	OBT	41	ov-ob-r	tan	hvy net	v sh	unfm/v sz	irr surf	folded apical; knobs; scab	nf
Reba	OBT	45	r-ov	buff/lt tan		flat tubers		irr surf	scab; 2nd growth; deep eyes; poor appearance	nf
Rideau	OBT	35	r-ov	med-dark-lt pur			med sz	irr surf	2nd growth; misshapen	nf
S. Red Norland	OBT	23	r-ov	lt red/buff	tex skin	flat	v sz	irr surf	**SCAB**; deep, folded apical	nf
Satina	OBT	39	r-ov	tan	lt net	flat	v sz	irr surf	scab; 2nd growth; stolons; misshapen	nf
US 17-91	OBT	42	r-ov-ob	tan/cream	smooth	v sh		irr surf	**MISSHAPEN**; stolons; knobs	nf/try agn
US 87-92	OBT	37	r-ov-ob	lt tan/cream	lt net	v sh	v sz	irr surf	shallow eyes, apical	nf/try agn
Valisa	OBT	43	r-ov-ob	dark tan/med rus	hvy net	v sh; flat			knobs; scab; 2nd growth; misshapen; growth cracks	nf
All Blue	OBD	9	r-ov-ob	med pur			v sz		stolons; yield down	nf
All Red	OBD	12	ov-ob	lt red				irr surf	knobs; misshapen	nf
All Sweetheart	OBD	13	r	lt-med red	tex skin				deep eyes; deep apical; high # B's	nf
B 1999-175	OBD	2	r-ov-ob	buff	smooth			irr surf	pitted scab; stolons	nf
B 2001-184	OBD	3	r-ov	lt tan				irr surf	lenticels; folded apical; low yield; growth cracks	nf
B 2177-52	OBD	4	r-ov	lt tan	lt-med net		unfm sz		stolons; shallow eyes; indented ends	try for proc
B 2229-4	OBD	6	ov-ob	buff				**irr surf**	misshapen; trace scab	nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
B 2246-14	OBD	5	r-ov	buff	slt net	unfm sh	unfm sz (med)	smooth surf	indented, shallow eyes	try agn
B 2259-3	OBD	1	r-ov	tan			good sz		shallow eyes; infected lenticels; growth cracks; **scab**	try for proc
Huckleberry	OBD	10	ov-ob	lt-med red	tex skin		v sz	irr surf	misshapen; knobs	nf
MacIntosh Black	OBD	8	r-ov-ob	med pur			sm	irr surf	misshapen; growth cracks	nf
Magic Molly	OBD	11	ov-ob	med pur			v sz	irr surf	misshapen; yield down	nf
Red Pearl	OBD	7	r-ov	med red	smooth		med-sm size		shallow eyes	try agn
rus Sebaga	OBD	14	r-ov	lt tan			v sz	irr surf	surface scab; lenticels	nf
W 1183-P	OBD	15	r-ov-ob	lt-med pur		v sh	v sz			nf
AF 2204-1	OBS	3	r-ov-ob	buff				irr surf	growth cracks; knobs; misshapen	nf
AF 2375-1	OBS	34	r-ov	buff				**irr surf**	**2nd growth**; scab; stolons; field sprouting	nf
AF 2376-3	OBS	12	r-ov-ob	buff				**irr surf**	scab; **2nd growth; misshapen**	nf
AF 2376-4	OBS	28	ov-ob	lt tan			v sz	irr surf	misshapen; scab; 2nd growth	nf
AF 2378-2	OBS	36	r-ov	buff				**irr surf**	**misshapen**	nf
AF 2386-2	OBS	26	ov-ob	buff				irr surf	**scab**; knobs; misshapen	nf
AF 2393-3	OBS	21	r-ov	lt red			med sz			nf
AF 2393-5	OBS	7	r-ov	lt red			v sz	irr surf	knobs	nf
AF 2393-5	OBS	F6	r-ov	buff			v sz, lg	irr surf	misshapen; knobs	nf
AF 2393-7	OBS	8	r-ov	med red	tex skin	pear sh	v sz			nf
AF 2407-1	OBS	37	ob	buff			v sz	irr surf	knobs	nf
AF 2412-2	OBS	1	ov-ob	med rus/tan				irr surf	scab; knobs; low yield	nf
AF 2412-6	OBS	25	ob	rus			v sz	irr surf	**knobs**; curved	nf
AF 2413-1	OBS	29	ov	lt tan/lt rus		pear sh		irr surf	**scab**; misshapen	nf
AF 2413-4	OBS	27	r-ov-ob	buff		v sh	v sz	irr surf	**scab**	nf
AF 2426-1	OBS	22	ov-ob	buff	lt net		v sz	irr surf	**scab**	nf
AF 2427-1	OBS	6	ov-ob	med rus			v sz		growth cracks; lenticels; low yield	nf
AF 2431-2	OBS	20	ov-ob	buff			v sz	irr surf	**knobs**; some scurf	nf
AF 2432-1	OBS	2	ov-ob	med rus			v sz	irr surf	knobs; curved; misshapen	nf
AF 2440-1	OBS	15	ov-ob	tan; partly rus		v sh	v sz		misshapen; scab	nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
AF 2489-1	OBS	19	ov-ob	lt-med rus			v sz	irr surf	knobs; pear shape; scab	nf
AF 2492-2	OBS	23	r-ov	buff	lt net			irr surf	indented eyes, apical; poor appearance	nf
AF 2493-1	OBS	13	r-ov-ob	buff	smooth	v sh	v sz	irr surf	scab	nf
AF 2497-2	OBS	5	r-ov	buff	slt net		v sz		stolons; scab; trace 2nd growth	try agn
AF 2498-1	OBS	30	r-ov	lt tan	slt net			irr surf	scab; lenticels	nf
AF 2498-3	OBS	16	r-ov	buff	lt net		v sz		indented apical; surface scab	try for proc
AF 2499-1	OBS	18	ov-ob	buff					**scab; 2nd growth; misshapen**	nf
AF 2500-4	OBS	31	r-ov	buff	med net; tex		v sz	**irr surf**	**misshapen**; scab	nf
AF 2502-13	OBS	33	r-ov-ob	buff		v sh		irr surf	trace scab; indented ends	nf
AF 2502-16	OBS	17	r-ov-ob	buff	smooth; net			irr surf	2nd growth; stolons; scab	nf
AF 2502-4	OBS	24	r-ov	lt tan	slt net		v sz	irr surf	stolons; scab; knobs	nf
AF 2502-6	OBS	4	r-ov-ob	buff		v sh	v sz	**irr surf**	scab; knobs; low yield	nf
AF 2508-8	OBS	9	r	buff			v sz		scab; misshapen; low yield	nf
AF 2525-1	OBS	10	r	buff		flat	sm-med	irr surf	2nd growth; stolons	nf
AF 2525-1	OBS	11	r-ov-ob	buff		v sh	v sz	irr surf	knobs; misshapen	nf
ARSW99-4120-1	OBS	35	r-ov-ob	buff/lt tan	slt net			irr surf	lenticels; knobs	nf
ARSW99-4122-3	OBS	32	r-ov-ob	lt tan	lt-med net				surface scab	nf
COMN 98108-3	OBS	48	ov-ob	rus				irr surf	2nd growth; knobs; curved	nf
COMN 98109-1	OBS	50	ob	rus				irr surf	knobs; curved	nf
MN 00043-1	OBS	42	r-ov-ob	lt rus				**irr surf**	knobs	nf
MN 000441-1	OBS	60	ov-ob	lt rus		v sh		irr surf	knobs; curved	nf
MN 00073-2	OBS	41	ov-ob	lt rus					**misshapen**; scab	nf
MN 00167-1	OBS	39	r	dark-med red			v sz	irr surf	stolons; indented apical	df
MN 00177-5	OBS	46	r	med red	smooth tex		v sz			try agn
MN 00177-6	OBS	45	ov-ob	lt red			v sz	irr surf	misshapen	nf
MN 00177-7	OBS	49	ov	med red	tex skin		v sz	irr surf		nf
MN 00307-1	OBS	64	r-ov-ob	buff		v sh		irr surf	scab; stolons	nf
MN 00317-1	OBS	53	ov-ob	lt tan				irr surf	scab	nf

Entry Name	Study	Entry #	Tuber Shape	Skin Color	Skin Texture	Uniform Shape	Uniform Size	Uniform Surface	Defects	Decision
MN 00439-1	OBS	62	r-ov	buff	smooth		v sz	**irr surf**	scurfy skin; **misshapen**	nf
MN 00441-1	OBS	52	ov	buff			v sz	irr surf	growth cracks; scab	nf
MN 00467-4	OBS	51	r-ov	buff			v sz	irr surf	**scab**	nf
MN 00501-1	OBS	43	r-ov	lt tan	med net	flat	v sz	smooth		try for proc
MN 99106-1	OBS	58	ob	buff			v sz	irr surf	misshapen; scab	nf
MN 99144-1	OBS	44	r-ov	buff			v sz		**knobs**; 2nd growth; misshapen	nf
MN 99158-1	OBS	57	r	tan	med-hvy net	unfm sh	unfm sz	smooth surf	scab; stolons; indented ends	try for proc
MN 99291-3	OBS	56	ov	buff					**flat**; knobs; scab; misshapen	nf
MN 99352-2	OBS	61	r-ov-ob	buff		v sh	v sz	irr surf	misshapen; trace scab	nf
MN 99380-1	OBS	54	r	buff			v sz (sm)		high # of B's	nf
MN 99383-1	OBS	38	r	buff	smooth		v sz (lg)		stolons; deep apical	try for proc
MN 99456-2	OBS	59	r-ov	buff	smooth/net			**irr surf**	knobs	nf
MN 99460-14	OBS	40	r-ov	lt red	smooth tex		good sz		2nd growth; growth cracks	nf
MN 99460-21	OBS	55	ob	rus			v sz		knobs; misshapen	nf
Rhst 00056-1	OBS	47	r	lt tan	smooth/net	unfm sh; flat		irr surf	surface scab; stolons	nf
W 37-29	OBS	67	r	rus					deep apical; stolons	try for proc
W 43-11	OBS	65	r-ov-ob	buff	some net	v sh			pointed ends; **scab**	nf
W 52-26	OBS	66	r-ov	buff	lt net		v sz		surface scab	nf

Key:

round=r	shape= sh	texture(ed)= tex	size= sz
long= l	variable= v	surface= surf	range= rge
oblong= ob	no future= nf	rough= rgh	small= sm
oval= ov	possible= poss	slight= slt	appearance= app
russet= rus	processing= proc	uniform= unfm	irregular surface= irr surf
medium= med	again= agn	large= lg	moderate=mod
heavy= hvy	doubtful future= df	blockish= blksh	**Bold Text=large problem**
light= lt	yield up= yld up	purple= pur	

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